

Claims

1. A ball chain arranged with a number of balls in one row and rollably holding the balls:

wherein each of the balls are pinched by a pair of spherical seats and the spherical seats are connected to each other by flange portions to thereby constitute a ball holding unit and a plurality of the ball holding units are connected in a shape of a rosary by a flexible connecting portion.

2. The ball chain according to Claim 1:

wherein the spherical seats and the flange portions are molded by a resin material and the connecting portion is formed by a material having a tensile strength larger than a tensile strength of the resin material.

3. A linear guide device comprising a track rail having ball rolling grooves each in a shape of a Gothic arch formed by intersecting a pair of ball rolling faces with each other, a slider having load rolling grooves each in a similar shape of a Gothic arch opposed to the ball rolling grooves and no load rolling paths for circulating the balls from one end to other end of each of the load rolling grooves for moving along the track rail and a number of balls rolling between the slider and the track rail while carrying a load and circulating endless tracks constituted by the load rolling grooves and the no load

rolling paths of the slider:

wherein the ball chain according to Claim 1 are integrated to each of the endless tracks of the slider such that the flange portions of the ball chain are disposed on an inner peripheral side or an outer peripheral side thereof and escape grooves by which the flange portions of the ball chains are contained and guided are formed at deepest portions of the ball rolling grooves of the track rail and the load rolling grooves of the slider both formed in the shape of the Gothic arch.

4. A ball chain comprising a number of balls arranged in one row, a plurality of ball holding members arranged among the balls contiguous to each other for rotatably holding the balls and a connecting portion for connecting the ball holding members:

wherein a tensile strength of the connecting portion is larger than a tensile strength of the ball holding members.

5. The ball chain according to Claim 4:

wherein the connecting portion is made of a metal material whereas the ball holding members are made of a resin material.

6. The ball chain according to Claim 4:

wherein the connecting portion and the ball holding members are made of a resin material.

7. The ball chain according to Claim 5 or 6:

wherein the ball holding members are padded to the connecting portion by injection molding.

8. The ball chain according to Claim 7:

wherein the connecting portion is formed with recesses and protrusions in correspondence with portions thereof for padding the ball holding members.

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